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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,713	11/26/2003	Chen-Kuo Sun	79777	4010
32697	7590	10/19/2005		
OFFICE OF PATENT COUNSEL SPAWARSYCEN, CODE 20012 53510 SILVERGATE AVE. ROOM 103 SAN DIEGO, CA 92152-5765			EXAMINER LU, TONY W	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/730,713

Applicant(s)

SUN ET AL.

Examiner

Tony Lu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/26/2003</u> .  | 6) <input type="checkbox"/> Other: ____                                     |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 5,10,11 and 12 are objected to because of the following informalities:

As for claim 5, on lines 3 and 4, the antecedent bases for "said first photodiode" and "said second photodiode" are unclear.

As for claim 10-12, the term "TH output signal" is not a well known abbreviation.

Appropriate corrections and clarifications are required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5,7,8-10,15-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun et al US5239181.

With respect to claim 1, Sun et al disclose an optically clocked optoelectronic track and hold apparatus comprising: a) a diode bridge(30) comprising a first node, a second node, a third node, a fourth node and a plurality of diodes; b) an input node, operatively coupled to said first node of said diode bridge, capable of receiving an analog input signal(fig.2); c) at least two current sources(+V, -V), operatively coupled to said second node of said diode bridge and said third node of said diode bridge, and wherein said at least two current sources are capable of forward biasing said diode

bridges(col.5); d) at least two photodetectors( $S_1$ - $S_4$ ), operatively coupled to said second node and said third node of said diode bridge capable of receiving an optical input clocking signal(from laser 21), and capable of reverse biasing and forward biasing said diode bridge in response to said optical input clocking signal(col.4-5); e) a hold capacitor(40), operatively coupled to said fourth node, capable of tracking said analog input signal when said diode bridge is forward biased, and capable of holding said analog input signal when said diode bridge switches from forward biased to reverse biased(col.4-5).

With respect to claim 2, per the above discussion, Sun et al disclose said at least two current sources comprises a first current source(+V, -V) and a second current source(+V,-V), and wherein said first current source is operatively coupled to said second node and said second current source is operatively coupled to said third node.

With respect to claim 3, per the above discussion, Sun et al disclose said at least two photodetectors are reverse biased by voltage sources(col.4-5).

With respect to claim 4, per the above discussion, Sun et al disclose said at least two photodetectors comprises a first photodiode( $S_2$ ) and a second photodiode( $S_1$ ), and wherein said first photodiode is operatively coupled to said second node and said second photodiode is operatively coupled to said third node.

With respect to claim 5, per the above discussion, Sun et al disclose said optical input clocking signal comprises a first optical input clocking signal(from fiber 23) and a second optical input clocking signal(from fiber 24), wherein a first photodiode( $S_2$ ) is capable of receiving said first optical input clocking signal, and wherein a second

photodiode( $S_1$ ) is capable of receiving said second optical input clocking signal, and wherein said first optical input clocking signal and said second optical input clocking signal are synchronized(col.5).

With respect to claim 7, per the above discussion, Sun et al disclose said at least two photodetectors switches said diode bridge from forward biased to reverse biased when said optical input clocking signal illuminates said at least two photodetectors with an optical pulse(col.4-5).

With respect to claim 8, per the above discussion, Sun et al disclose said at least two photodetectors switches said diode bridge from reverse biased to forward biased when said at least two photodetectors do not generate enough photocurrent to reverse bias said diode bridge(col.4-5).

With respect to claim 9, per the above discussion, Sun et al disclose said optically clocked optoelectronic track and hold apparatus having a positive node device( $V_+$ ) and a negative node device( $V_-$ ), wherein said optically clocked optoelectronic track and hold apparatus receives said analog input and output an output signal different from the analog input signal.

With respect to claim 10, per the above discussion, Sun et al disclose said optically clocked optoelectronic track and hold apparatus further comprises an amplifier(35), operatively coupled to said hold capacitor, capable of outputting a first track and hold output signal.

Sun et al's apparatus inherently performs the claimed method steps(claims 15-18)

With respect to claim 20, Sun et al disclose an optically clocked optoelectronic track and hold apparatus comprising: means(a first node) for receiving an analog input signal and an optical input clocking signal(from the laser,21); means(diode bridge 30) for determining whether an optical pulse is received by at least two photodetectors from said optical input clocking signal; means(S<sub>1</sub>-S<sub>4</sub>) for maintaining a diode bridge(30) in forward bias if said optical pulse is not received from said optical input clocking signal; means(S<sub>1</sub>-S<sub>4</sub>) for switching said diode bridge to reverse bias for a desired time if said optical pulse is received from said optical input clocking signal.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6,13,14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al US5239181.

With respect to claims 6 and 13-14, per the above discussion, Sun et al lack a clear inclusion whether or not the photodetectors have fast rise time and long fall times. Selecting a specific manner for operating the photodetectors would have been obvious to one of ordinary skill in the art order to provide more control to the operation of photodetectors.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sun et al accordingly in order to provide desired performances of the photodetectors. The further citations regarding parallel configuration of photodiodes in claim 13 would have been obvious for similar reasons set forth in the discussion above. The further inclusion of illuminated regions onto the photodiodes would have also been obvious to one of ordinary skill in the semiconductor art in order to provide a more compact design for the circuitry of the apparatus.

The proposed system of Sun et al, discussed above, inherently performs the claimed method steps of claim 19.

Claim 11 is rejected under 35 U.S.C 103(a) as being unpatentable over Sun et al US5239181 in view of Taddiken US5455584.

With respect to claim 11, per the above discussion, Sun et al fail to teach a quantizer capable of quantizing said first track and hold output signal and outputting a digital output signal.

Taddiken disclose high frequency high resolution quantizer having a quantizer(20), operatively coupled to a amplifier(16), capable of quantizing a track and hold output signal and outputting a digital output signal.

Although Sun et al lack a clear teaching of a quantizer, using a known and available quantizer in order to convert an analog input signal to a digital output signal would have been obvious to one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sun et al with a quantizer taught by Taddiken in order to provide a desired formation of the output signal.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al US5239181 in view of Taddiken US5455584 as applied to claim 11 above, and further in view of Metz US4659945.

With respect to claim 12, per the above discussion, Sun et al and Taddiken fail teach a second electronic track and hold device, operatively coupled to said optically clocked optoelectronic track and hold apparatus, capable of receiving said first TH output signal and an electronic clock signal, wherein said electronic track and hold device is capable of outputting a second TH output signal.

Metz discloses a sampling bridge(see fig.7) with a first electronic track and hold device(12) and a second electronic track and hold device(20) being connected together, wherein the second electronic track and hold device(20) is capable of receiving a first TH output signal(from the first track and hold device), an electronic clock signal(IS1 and IS2) and outputting a second TH output signal(  $V_{out}$ ).

Although Sun et al and Taddiken fail to teach an additional electronic track and hold device, operatively coupled to said optically clocked optoelectronic track and hold apparatus, capable of receiving said first TH output signal and an electronic clock signal, wherein said electronic track and hold device is capable of outputting a second TH output signal, utilizing an additional electronic track and hold device in order to



provide compensation of the TH output signal from said optically clocked optoelectronic track and hold apparatus would have been obvious to one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the proposed apparatus of Sun et al and Taddiken by supplying a second electronic track and hold device taught by Metz in order to provide a desired compensation to the output signal from the previous circuitry of the apparatus. This would provide a more reliable output signal from the apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Lu whose telephone number is 5712728448. The examiner can normally be reached on M-F 9:00am- 6:00pm.

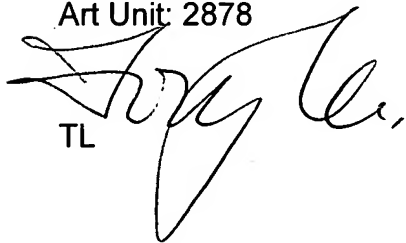
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 5712722444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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